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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/633,982	08/04/2003	Chin-Hsi Lin	251310-1060	5622

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EXAMINER	
PHAM, LY D	

ART UNIT	PAPER NUMBER
2827	

DATE MAILED: 08/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

AK

Office Action Summary	Application No.	Applicant(s)	
	10/633,982	LIN ET AL	
	Examiner	Art Unit	
	Ly D. Pham	2827	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 July 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *5-10* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *5-10* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *04 August 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

FINAL ACTION

DETAILED ACTION

1. Applicant's Amendment filed July 29, 2005 has been entered. Claims 1 – 4 and 11 – 15 have been canceled. Claim 5 has been amended.

2. Claims 5 – 10 are presented for the examination.

Response to Arguments

3. Applicant's arguments filed July 29, 2005 have been fully considered but they are not persuasive. Below sets forth grounds for the claims rejection.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Joachim et al. (US Pat Pub 2004/0095819 A1) in view of Salling (US Pat 6,646,906 B2).

Regarding **claim 5**, Joachim et al. disclose a ferroelectric memory comprising:

a sense amplifier (fig. 3, sense amp 21);

a memory unit coupled to the sense amplifier (fig. 1, memory unit coupled to the sense amp as part of fig. 3);

a positive bit line and a negative bit line which are parallel to each other and are coupled to the sense amplifier (fig. 3, bit line BL 16 and bit line complement /BL 16' coupled to the sense amp 21);

a word line which is virtually perpendicular to the positive and the negative bit lines (fig. 3, word line WL);

a positive memory cell which is coupled to the word line and will be connected to the positive bit line when the word line is enabled (fig. 3, C_{ferro} 17 and TS transistor 19 on the right side coupled to bit line BL);

a negative memory cell which is coupled to the word line and will be connected to the negative bit line when the word line is enabled (fig. 3, C_{ferro} 17' and TS transistor 19' on the left side being coupled to bit line complement /BL);

a plate line which is coupled to the positive and the negative memory units (fig. 3, plate line PL 18);

a first current source which is coupled to the positive bit line (fig. 3, const. current sink 26); and

a second current source which is coupled to the negative bit line (fig. 3, const. current source 27).

Although Joachim et al. did not clearly show the ferroelectric memory wherein while reading the memory cell, the first current source/sink supplies a first current to the positive bit line and the second current source supplies a

second current to the negative bit line before the sense amplifier is activated for enlarging the voltage difference between the positive bit line and the negative bit line. However, Salling has taught such feature in col. 15, lines 1 – 17 and col. 16, lines 3 – 25 (note that the sensing step follows the charging steps of charing each bit lines with its associated current source—first current source to reference bit line and second current source to output bit line (note that the indicated reference bit line and output bit line correspond to positive and negative bit lines, or in other words, pair of complementary bit lines as taught by Joachim et al.)

Therefore, it is considered obvious to one of ordinary skill in the art, at the time the invention was made, to include the feature taught by Salling to the disclosure by Joachim et al., so that the resulting capacitance value of the Ferroelectric capacitors may be sensed without causing polarization reversal of the ferroelectric portion of the capacitor (abstract).

6. Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Joachim et al. and Salling, and further in view of Madan (US Pat Pub 2004/0141353 A1).

Regarding **claim 6**, Joachim et al. and Salling disclose the ferroelectric memory according to claim 5, except wherein the ferroelectric memory is applied in a plate-line driven access method, of which, the first current source flows to ground from the positive bit line while the second current source flows to ground from the negative bit line. However, this feature has been shown by Madan

(paragraphs 0029 and 0030, plate line drivers for read operation and memory bit lines BL1/BL1' are precharged to ground in read operation).

Therefore, it is considered obvious to one of ordinary skill in the art, at the time the invention was made, to combine the reference taught by Madan to the disclosure taught by Joachim et al., so that reference voltage can be established during read operation (paragraphs 0035 and 0038).

As per **claim 7**, Joachim et al. also disclose the ferroelectric memory according to claim 6, wherein the first current source and the second current source, which individually comprises an N-type transistor (fig. 3, transistors 24 and 24' are N-type).

7. Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Joachim et al. and Salling, and further in view of Muneno (US Pat 6,310,797 B1).

Regarding **claim 8**, Joachim et al. and Salling disclose the ferroelectric memory according to claim 5, except wherein the ferroelectric memory is applied in a bit-line driven access method, of which, the first current source flows to the positive bit line while the second current source flows to the negative bit line. However, the feature has been shown by Muneno (abstract: ... a bit line BL is precharged to a voltage equal to Vcc/2).

Therefore, it is considered obvious to one of ordinary skill in the art, at the time the invention was made, to include the feature taught by Muneno to the disclosure by Joachim et al., so that data is read by detecting a change in voltage

on the bit line BL which occurs when the bit line BL is released from the precharged state ... (abstract).

Regarding **claim 9**, because applicants have failed to challenge any of the Examiner's "Official Notices" in a proper and reasonably manner, in which the first current source and the second current source individually comprises a P-type transistor, for transistor types acting as a switch are considered well-known in the art since the type to be used depends on the driving signal state, whether high or low, for corresponding compatibility, they are now considered as admitted prior art. See MPEP 2144.03.

8. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Joachim et al. and Salling, and further in view of Jeon et al. (US Pat Pub 2003/0095457 A1).

Regarding **claim 10**, Joachim et al. and Salling disclose the ferroelectric memory according to claim 5, except wherein the sense amp is a latch sense amplifier. However, this feature has been taught by Jeon et al. (paragraph 0003). Therefore, it is considered obvious to one of ordinary skill in the art, at the time the invention was made, to incorporate the sense amplifier taught by Jeon et al. to the ferroelectric memory disclosed by Joachim et al. so that high speed can be obtained while maintaining performance requirement (paragraph 0003).

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ly D. Pham whose telephone number is 571-272-1793. The examiner can normally be reached on Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoai Ho can be reached on 571-272-1777. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Ly Pham
August 8, 2005

HUAN HOANG
PRIMARY EXAMINER